

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A61B 10/00, G02B 27/02	A1	(11) International Publication Number: WO 95/28130
		(43) International Publication Date: 26 October 1995 (26.10.95)

(21) International Application Number: PCT/IT94/00043

(22) International Filing Date: 15 April 1994 (15.04.94)

(71)(72) Applicant and Inventor: SOLDINI, Alberto [IT/CA];
Boulevard St. Laurent Rockcliffe, 225 Alvin Road, Ottawa,
Ontario K1H 1H6 (CA).

(74) Agent: MASCIOLI, Alessandro; A.N.D.I. - Associazione
Nazionale Degli Inventori, Via Urbana, 20, I-00184 Roma
(IT).

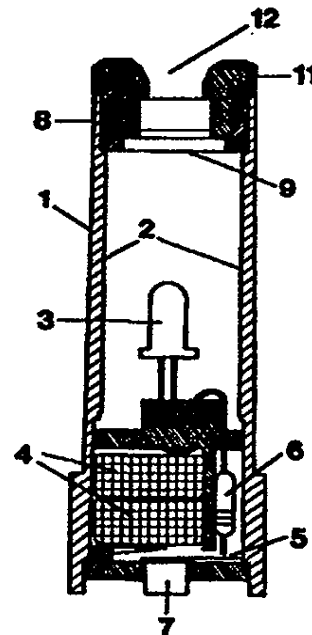
(81) Designated States: AU, CA, CN, JP, KP, KR, RU, UA, US,
European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR,
IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.

(54) Title: POCKET-SIZE DEVICE, WITH MICROSCOPIC MAGNIFYING AND INCORPORATED LIGHT SOURCE FOR THE
VISUALIZATION, THROUGH THE SALIVA, OF THE FEMALE FERTILITY

(57) Abstract

The device is made by a pocket-size capsule (13), including the means for lighting (3, 4, 5, 6, 7) and the optical magnifying (10, 11, 12) of salivary samples set on the slide (9), incorporated in order to point out and recognize the possible fern structure (F), typical of the fertile period of the cycle.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

POCKET-SIZE DEVICE, WITH MICROSCOPIC MAGNIFYING AND
INCORPORATED LIGHT SOURCE FOR THE VISUALIZATION,
THROUGH THE SALIVA, OF THE FEMALE FERTILITY

The invention concerns a pocket-size device, for the microscopic magnifying, with internal light source, of salivary samples, in order to determine the female cycles of fertility.

It is well known that every woman, during the monthly cycle, some days are fertile. The egg matures towards the half of the cycle, generally 14 days prior the onset of menstruation. All in all the days useful to have a pregnancy are almost six.

Moreover in subjects with irregular cycle, the moment of the ovulation is difficult to determine.

During the cycle, in the female body, several changes take place: for example the basal temperature, which is low in the first half of the cycle, it rises in the second, while the salivary composition changes in relationship with the quantity of present hormones.

The current invention originates from the experimental researches carried out for several years on the female saliva in the various cycle phases, which evidenced a very strict correlation between the actual

ovulation and the resulting image on the microscope, consisting in several branches, resembling ferns, with thick leaves.

During the infertile days, this image shows instead only a few points in open order.

This structure starts to be visible 3-4 days before the egg matures and ceases 2-3 days after ovulation. The fertile period lasts less than one week.

In such period, if a woman does not want to conceive, she should take some precautions. On the other hand, if a pregnancy is desired, a concentration of sexual activity in this period is suggested.

To a certain extent, it is also possible to determine the sex of the baby. It has been realized that more girls are conceived when the image of the fern is growing; on the contrary when the fern structure is full and well defined, more boys are conceived.

The aim of the invention is to allow an immediate check, everywhere and in each moment, of the fertility situation of the woman, through the application of the above mentioned scientific principle.

The object of the invention is gained with the device, made by a pocket-size capsule comprising the means for lighting and optical magnifying of salivary samples set on an incorporated typical of the fertile

period of the cycle.

The invention is useful in several and important situations like:

- preventing undesired pregnancies without using contraceptives;
- conceiving a baby for couples who have problems, since it determines the exact moment of ovulation;
- controlling the private life.

In a possible variation of the invention, the pocket-size device includes a sensor with a optical fibres, or other electric mean, electronic or electromechanic, suitable to allow the variety of colourings detectable in the image of the salivary sample.

In a further variation, this function can be realized with mechanisms protruding from structure (1).

The invention is shown in deeper details in the following pages with the help of drawings which display the use.

Figure 1 shows a vertical section of the device.

Figure 2 shows the details of the single elements.

Figures 3-4-5 show, respectively, the image of the external capsule, its section and the container of the parts forming the device.

Figures 6-7-8 show a reproduction of the images visible with the invented device, typical respectively of the infertile, transitory and fertile periods.

The figures show a pocket-size device with microscopic magnifying and incorporated light source, to visualize, through the saliva, the female fertility, which includes:

- a cylindrical hollowed structure (1), internally coated by a film (2), preferably in anti-reflection PVC;
- a lighting mean, incorporated in the bottom of structure (1), made by a lighting Led (3), fueled by the incorporated batteries (4), through the contact shell (5) and the diode (6), operated by the shutter-release (7);
- a carrier (8), structured to seat on top of structure (1), carrying the slide (9) and on which the salivary sample is set, in order to be crossed by the lighting rays originated by the Led (3) and channeled by the cylindrical structure (1);
- a microscopic magnifying device (10), held by the nut (11), shaped to be placed at adjustable distance, for focusing, on top of carrier (8), in order to convey the image of the salivary sample to the ocular (12) and verify the presence of fern structures (F), typical of

the fertile period;

- a locking capsule (13), applicable with pressure and/or heat on structure (1), for anti-dust pocketable carry, to protect the optical parts.

The operating directions of the invention can be so outlined:

- the user removes the cover capsule (13) and pulls out the structure (1), carrying the optical parts;
- cleans the lens of the ocular (12) and the slide (9);
- applies a small, not foamy, salivary sample on the slide and let it dry for a few minutes;
- insert the ocular (12) together with the nut (11) in the carrier (8);
- lean your eye on the ocular (12), press the shutter-release (7) and focus the image, by turning the ocular (12);
- compares the image visualized with the ones known to her or with the figures 6-7-8, thus having the immediate verification of her fertility in that moment.

CLAIMS

- 1) Pocket-size device, with microscopic magnifying and incorporated lighting source, to visualize, through the saliva, the female fertility, characterized by:
- a cylindrical hollowed structure (1), internally coated by a film (2), preferably in anti-reflection PVC;
 - a lighting mean, incorporated in the bottom of structure (1), made by a lighting Led (3), fueled by the incorporated batteries (4), through the contact shell (5) and the diode (6), operated by the shutter-release (7);
 - a carrier (8), structured to seat on top of structure (1), carrying the slide (9) and on which the salivary sample is set, in order to be crossed by the lighting rays originated by the Led (3) and channeled by the cylindrical structure (1);
 - a microscopic magnifying device (10), held by the nut (11), shaped to be placed at adjustable distance, for focusing, on top of carrier (8), in order to convey the image of the salivary sample to the ocular (12) and verify the presence of fern structures (F), typical of the fertile period;

- a locking capsule (13), applicable with pressure and/or beat on structure (1), for anti-dust pocketable carry, to protect the optical parts.
- 2) Pocket-size device according to claim 1, characterized by the fact that the rotation of the ocular (12) in respect to the carrier (8), determines the focusing of the salivary sample applied on the slide (9).
- 3) Pocket-size device according to claim 1, characterized by the fact that the incorporated Led (3) is lighted by the shutter-release (7), in order to verify the presence of the fern structure (F) in the salivary sample set on the slide (9).
- 4) Pocket-size device according to claim 1, characterized by the presence of a sensor with optical fibres, or of a different kind, to determine the period of the cycle through the variety of colourings, detectable in the image of the salivary sample.

1/3

FIG.1

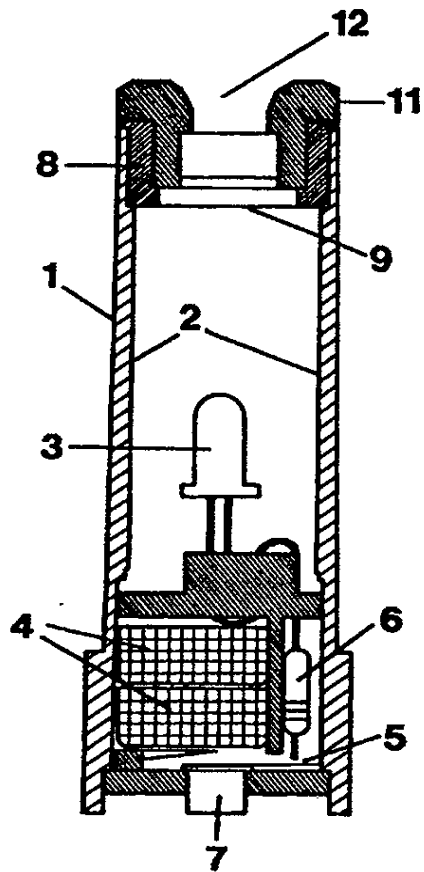
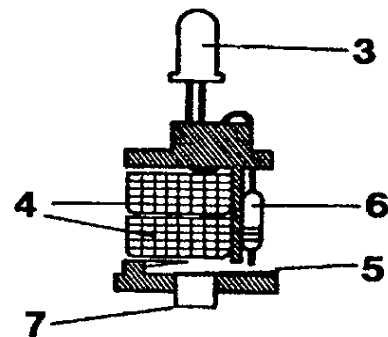
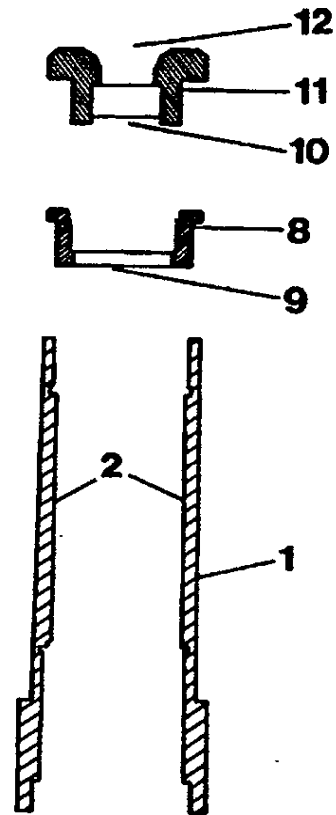


FIG.2



SUBSTITUTE SHEET

FIG.3

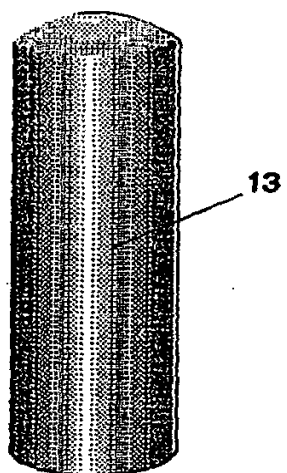


FIG.4

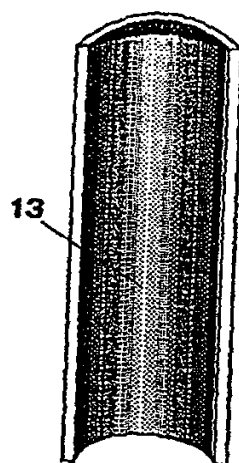
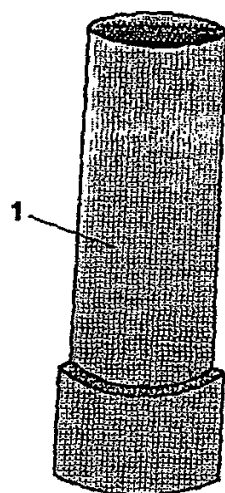


FIG.5



3/3

FIG.6

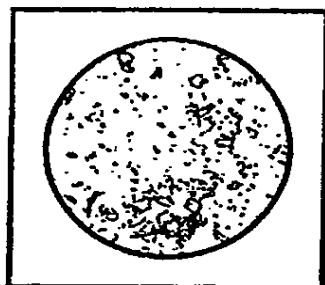


FIG.7

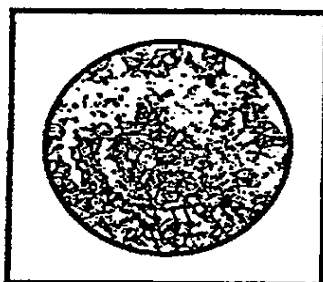
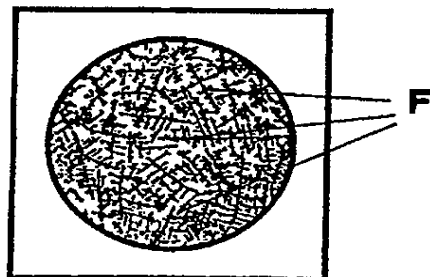


FIG.8



INTERNATIONAL SEARCH REPORT

International Application No
PCT/IT 94/00043

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61B10/00 G02B27/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61B G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB,A,2 190 765 (ORTUETA CORONA) 25 November 1987 see page 2, line 109 - line 123	1-4
Y	DE,U,91 04 079 (WEIDEMANN) 1 August 1991 see page 11, paragraph 3; claim 1	1-4
A	WO,A,84 04237 (DUBRUCQ) 8 November 1984 see claim 1	4

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "A" document member of the same patent family

Date of the actual completion of the international search

6 December 1994

Date of mailing of the international search report

14.12.94

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+ 31-70) 340-3016

Authorized officer

GLAS, J

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. onal Application No

PCT/IT 94/00043

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB-A-2190765	25-11-87	CA-A- 1300928	19-05-92
		DE-A- 3716406	19-11-87
		FR-A- 2598826	20-11-87
		US-A- 4815835	28-03-89
DE-U-9104079	01-08-91	US-A- 5267087	30-11-93
WO-A-8404237	08-11-84	US-A- 4502487	05-03-85
		EP-A- 0144383	19-06-85
		JP-T- 60501195	01-08-85
		US-A- 4633885	06-01-87